Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Previously amended and now amended further) A method for distributing at least two gases upstream onto a catalyst, comprising:

a) providing a gas distributor comprising a body having a plurality of channels therethrough and a plurality of outlets from said channels, said outlets configured on one downstream face of said gas distributor to distribute gas onto the catalyst, wherein a chamber is defined between the one downstream face and the catalyst;

b) feeding a first gas into the gas distributor;

c) separately feeding a second gas into the gas distributor simultaneously with step b); and

d) allowing the first and second gases to flow through the gas distributor, out through the outlets, and into the chamber wherein the first and second gases first come into contact with one another and mix with one another in the chamber while being directed toward and into contact with the catalyst.

2. (Original) The method of claim 1 wherein steps b) through d) are carried out such that gases flow across said catalyst at a gas hourly space velocity of at least 20,000 h^{-1}.

3. (Previously presented) The method of claim 1 wherein steps b) through d) are carried out such that gases flow across said catalyst at a gas hourly space velocity of about 100,000 - 25,000,000 h^{-1}.

4. (Original) The method of claim 1 wherein the gas distributor comprises a plurality of plates that have been etched and bonded together.

5. (Original) The method of claim 1 wherein the gas distributor has at least 7 outlets.

6. (Previously presented) The method of claim 1 wherein the gas distributor has at least 100 outlets per square foot.

7. (Previously presented) The method of claim 1 wherein the gas distributor has at least 1,000 outlets per square foot.

8. (Previously presented) The method of claim 1 wherein the gas distributor has at least 2,000 outlets per square foot.

9. (Original) The method of claim 1 wherein the first and second gases are combined within the gas distributor such that the gas exiting through the outlets comprises a mixture of the first and second gases.

10. (Original) The method of claim 1 wherein the first and second gases are not combined within the gas distributor and the first and second gases are mixed between the outlets and the catalyst.

11. (Original) The method of claim 1 wherein the pressure drop across the gas distributor is less than 30 psi.

12. (Previously presented) The method of claim 1 wherein each channel has an inlet opening and an outlet opening, and the gas distributor has a ratio of the sum of the areas of the inlet openings to the sum of the areas of the outlet openings ~~is~~ between about 1:2 and 1:10.

13. (Previously presented) The method of claim 12 wherein the ratio of the sum of the areas of the inlet openings to the sum of the areas of the outlet openings is between about 1:2 and 1:6.

14. (Previously presented) The method of claim 1 wherein each channel has an inlet and an outlet, and further has at least one change in direction between its inlet and its outlet.

15. (Original) The method of claim 1 wherein some channels share an outlet opening.

16. (Original) The method of claim 1 wherein some channels share an inlet opening.

17. (Previously presented) A process for converting a hydrocarbon-containing feed gas to liquid hydrocarbon products comprising:

a) providing a catalyst in a syngas reactor and a micro-channel gas distributor positioned upstream of the catalyst in the syngas reactor, wherein a chamber is defined between a downstream face of said gas distributor and the catalyst in the syngas reactor;

b) flowing the hydrocarbon-containing feed gas and an oxygen-containing gas through the micro-channel gas distributor having a plurality of gas outlets wherein ~~whereby~~ at least 25 outlets per square foot are configured on the ~~a~~ downstream face of said gas distributor to produce a reactant gas stream;

c) maintaining the first and second gases separate until they enter the chamber wherein the first and second gas first come into contact with one another in the chamber and mix with one another in the chamber and are directed toward the catalyst;

d) reacting the reactant gas stream in the syngas reactor while contacting the reactant gas stream with the catalyst under conditions effective to produce a syngas stream comprising hydrogen and carbon monoxide; and

~~c~~d) reacting at least a portion of the syngas stream in a synthesis reactor under conditions effective to produce liquid hydrocarbon products.

18. (Currently amended) The process according to claim 17 wherein step d~~e~~) includes keeping the temperature of the reactant gas stream at about 30°C - 750°C, contacting the reactant gas stream with the catalyst, keeping the temperature of the catalyst at about 600-2,000°C, and maintaining the reactant gas stream at a pressure of about 100-40,000 kPa while contacting the catalyst.

19-28. (Cancelled)

29. (Currently amended) The process according to claim 17 wherein the gas distributor is configured such that the hydrocarbon-containing feed gas and the oxygen-containing gas are not combined within the gas distributor, and further wherein the hydrocarbon-containing feed gas and the oxygen-containing gas are mixed after exiting said outlets and wherein the outlets for the first and second gases are both oriented generally toward the catalyst.

30. (Previously presented) The process according to claim 17 wherein the hydrocarbon-containing feed gas and the oxygen-containing gas are maintained in separate sets of flow channels with interspersed outlets and do not mix during their transit through the gas distributor to emerge as interspersed streams from the gas distributor via said outlets.

31. (Previously presented) The process according to claim 17 wherein the gas distributor has 100 or more outlets per square foot.

32. (Currently amended) A method of partially oxidizing a feed gas, comprising:

providing a catalyst bed comprising a catalyst;

providing a gas distributor disposed upstream of said catalyst bed, said gas distributor comprising a body having a plurality of channels therethrough, and a plurality of outlets from said channels, said outlets being configured in a downstream face of said gas distributor for distributing gas across the catalyst bed wherein a chamber is defined between the downstream face of said gas distributor and the catalyst bed;

feeding a feed gas into one set of channels of the gas distributor, and simultaneously feeding an oxygen-containing gas into a separate set of flow channels, wherein the outlets of the separate set of flow channels are interspersed across the downstream face with the outlets of the set of channels into which the feed gas is fed, wherein the gas distributor has at least 20 outlets for each gas per square foot;

allowing the feed gas and the oxygen-containing gas to flow separately without mixing during their transit through the gas distributor and to exit the downstream face of the gas distributor via said interspersed outlets to first come into contact in the chamber and ~~then~~ mix upon exiting the gas distributor to produce a reactant gas stream; and

contacting the catalyst with the reactant gas mixture while the reactant gas mixture passes over, or through the catalyst at a gas hourly space velocity in the range of about 20,000 h^{-1} to about 100,000,000 h^{-1} under conditions effective to produce a syngas stream comprising hydrogen and carbon monoxide.

33. (Previously presented) The method according to claim 32 wherein the channels have substantially the same length.

34. (Previously presented) The method according to claim 32 wherein the outlets are distributed evenly across the downstream face.

35. (Previously presented) The method according to claim 32 wherein the set of channels for each gas has inlets twice as closely packed as its respective outlets.

36. (Previously presented) The method according to claim 32 wherein each channel has at least two turns between its inlet and its outlet.

37. (Previously presented) The method according to claim 32 wherein the gas distributor has 100 or more outlets per square foot.

38. (Previously presented) The method according to claim 32 wherein the gas distributor has 1,000 or more outlets per square foot.

39. (New) The method according to claim 32 wherein the outlets for the feed gas and oxygen-containing gas are both oriented generally toward the catalyst and the downstream face of the gas distributor is defined by downstream edges of a plurality of stacked plates having their upstream edges at the opposite end of the flow channels from the outlets.